

Amendments to the Claims:

This listing of claims replaces all prior versions and listings in the application.

Listing of Claims:

Claim 1 (currently amended). A method of dissipating heat generated by an electronic component, comprising the step of attaching the electronic component to a heat receiving surface using a thermal adhesive, wherein the thermal adhesive comprises:

a mixture of a curable polymer composition, a solder powder, and a fluxing agent, and

wherein the step of attaching comprises heating said mixture to a temperature above the melting point of said solder powder, such that the solder reflows to form interconnecting metal structures dispersed in the polymer matrix prior to the time the polymer becomes cured, and thereafter curing the polymer matrix such that the adhesive paste hardens.

Claim 2 (original). The method of claim 1 wherein said mixture contains 40% to 60% solder powder by volume.

Claim 3 (original). The method of claim 1 wherein said mixture further comprises metallic particles having a high melting point.

Claim 4 (original). The method of claim 3 wherein said metallic particles have a thermal conductivity of about 400 W/m-K or more.

Claim 5 (original). The method of claim 3 wherein the combined volume percentage of metallic particles and solder in said adhesive mixture after it has been cured is about 40 to 60%.

Claim 6 (original). The method of claim 3 wherein said metallic particles are copper, silver or a combination thereof.

Claim 7 (original). The method of claim 3 wherein said metallic particles have a mean particle size in the range of about 0.01 mm to 0.1 mm.

Claim 8 (original). The method of claim 3 wherein at least some of said metallic particles are coated with solder prior to being incorporated into said mixture.

Claim 9 (previously presented). The method of claim 1 wherein said uncured polymer is a liquid at room temperature.

Claim 10 (previously presented). The method of claim 1 wherein said mixture is formed at less than 80° C.

Claim 11 (original). The method of claim 1 wherein said polymer matrix is cured by further heating after the solder has melted and reflowed.

Claim 12 (original). The method of claim 1 wherein said electronic component is an IC chip.

Claim 13 (original). The method of claim 1 wherein said heat receiving surface is a surface of a heat spreader or heat sink.

Claim 14 (original). The method of claim 1 wherein said heat receiving surface is actively cooled.

Claim 15 (original). The method of claim 1 wherein said thermal adhesive has a thermal conductivity of about 15 W/mK or more.

Claim 16 (original). The method of claim 1 wherein said mixture is dispensed or screen printed onto either said electronic component or onto said heat receiving surface.

Claim 17 (original). The method of claim 1 wherein the coefficient of thermal expansion of said electronic component is different than the coefficient of thermal expansion of said heat receiving surface.

Claim 18 (original). The method of claim 1 wherein said thermal adhesive has a thickness less than about 0.2 mm.

Claim 19 (original). The method of claim 1 wherein said solder has a melting point of about 235° C or less.

Claim 20 (original). The method of claim 19 wherein said solder has a thermal conductivity of about 20 W/m-K or more.

Claim 21 (original). The method of claim 20 is selected from the group consisting of alloys of Sn/Bi, Sn/Pb, Sn/Zn, Sn/Ag, Sn/Cu, Sn/Ag/Cu, and Sn/Ag/Cu/Bi.

Claim 22 (original). The method of claim 1 wherein said polymer matrix comprises an epoxy, a silicone or a cyanate ester.

Claim 23 (previously presented). A method of attaching a heat producing electronic component to a heat receiving substrate, comprising:

forming an adhesive paste comprising a mixture of solder particles, a fluxing agent and a liquid polymer,

placing said adhesive paste between a mounting surface of said electronic component and an opposing surface of said heat-receiving substrate,

thereafter, heating the assembly to a temperature sufficiently high to cause said solder particles to melt and reflow prior to the time the polymer becomes cured,

thereafter curing said polymer such that the adhesive paste hardens.

Claim 24 (original). The method of claim 23 wherein said mounting surface and said opposing surface are substantially flat and are separated by a distance of about 0.2 mm or less.

Claim 25 (original). The method of claim 24 wherein said adhesive paste further comprises particles of a metallic filler material having a high melting point.

Claim 26 (original). The method of claim 25 wherein said metallic filler material comprises silver or copper.

Claim 27 (original). The method of claim 25 wherein at least some of said metallic particles are precoated with solder prior to being added to said mixture.

Claim 28 (original). The method of claim 23 wherein said polymer is thermosetting and has an optimal curing temperature which is different than the melting point of said solder.

Claim 29 (original). The method of claim 23 wherein said polymer is relatively low viscosity.

Claim 30 (original). The method of claim 25 wherein said mixture comprises more than about 40 to 60% by volume of filler and solder.

Claim 31 (original). The method of claim 23 wherein said electronic component and said heat receiving substrate have substantially different coefficients of thermal expansion.

Claim 32 (canceled).

Claim 33 (previously presented). The method of claim 28 wherein the polymer is cured at a temperature that is lower than the melting point of the solder.